



Horticulture & Crop Science Series 722

January 2002

# **The OSU Vegetable Team Report - 2**

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# The OSU Vegetable Team

## Semi - Annual Report #2, Fall - Winter 2000 - 2001

### Vision

*The OSU Vegetable Team is a dynamic focusing of OSU resources (human and material) to address the needs and interests of the vegetable industry in Ohio and beyond.*

### Mission

*To provide the Midwest vegetable industry with guidance to manage available resources that will attain sustained profitability through a unique, highly integrated program of research, instruction and extension education.*

### Websites

Check out these two websites for additional information on vegetable production and the OSU Veg-etable Team:

#### The VegNet Website

[vegnet.osu.edu](http://vegnet.osu.edu)

#### The VegNet Newsletter

Keep up to date with the latest information on vegetable production and the vegetable industry by receiving the VegNet newsletter via email sent directly to your computer whenever they are published. To get on the list, send an email message fro your computer to:

[vegnet-on@postoffice.ag.ohio-state.edu](mailto:vegnet-on@postoffice.ag.ohio-state.edu)

Just put the word 'subscribe' in the body and send the message. You will be added to the list and receive all future issues.

All past issues are available at the VegNet website, (see address above).

#### Ohioline

<http://www.ag.ohio-state.edu/~ohioline>

**More Websites:** A complete listing of all faculty and vegetable related web pages begins on page 5. The list includes the following websites: Agricultural Business Enhancement (ABE) Center, Hydroponic Tomatoes, IPM Guidelines for vegetables, IPM. Weekly summary of pests caught in traps, Dr. Matt Kleinhenz and The Weed Workshop.

**T**his is the second in a series of reports from the OSU Vegetable team to be published on a semi-annual basis. The objective of this publication is to illustrate the comprehensive nature of the Ohio State vegetable extension, research and teaching programs. I think readers will be surprised at the breadth and scope of the vegetable program as were the team members as we compiled this list of our various activities. This report will focus on fall and winter 2000 -2001 but also includes many other activities or programs not related to the season. Next winter, we will report on spring and summer activities. We hope you find the report informative and use it as a resource to contact the team member who can help you with your needs. We also look forward to any comments or suggestions that you have

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**Educational Materials: (Bulletins, charts, fact sheets, handbooks, handouts, newsletters, publications, research reports, slide sets, videotape, web pages or other types of electronic information).**

#### **Bulletins**

2001 Ohio Vegetable Production Guide, Bulletin 672-00

The following is an unsolicited comment to some vegetable team members by a senior sales and technical representative from a major allied industry in OH, who is uniquely qualified to objectively assess the impact of OSUE programs on the vegetable industry.

"Bulletin 672 is the most important source of information available to me. I carry a copy in my truck and I use it every day. When I hire a new counter sales staff, I give them their own copy. I sit down them for up to an hour and go over the book, and I teach them how to use. It becomes their most valuable resource too."

Cultural Practices in Vegetable Crop Weed Management Programs, Bulletin 888. . Doohan, Cardina and Kleinhenz

**Charts, Fact Sheets, Handouts, Newsletters, Publications and Research Reports, etc.:**

#### **Charts:**

- Susceptibility of Sweet Corn Hybrids to Stewart's Bacterial Wilt, for the OSU VegNet web site
- Common Rust of Sweet Corn for the OSU VegNet web site
- MDM of Sweet Corn for the OSU VegNet web site

## **Newsletters**

**Tuber Times** - Potato Growing Tips and News from the World of Research

**VegNet - The Newsletter** The latest information on vegetable growing including pest updates, crop reports, new pesticide registrations or updates, cultural information and general information of interest to the vegetable industry. Issued weekly during the growing season and on an irregular basis in the off-season.

## **Publications:**

Beanland, L., Hoy, C. W., Miller, S. A., and Nault, L. R. 2000. Influence of aster phytoplasma on aster leafhoppers. *Ann. Entomol. Soc. Am.* 93:271-276.

Derksen, R. and Miller, S. A. 2001. Comparing the efficacy of fungicide application technologies for disease control in tomatoes. Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 89-91.

Gergon, E. B., Miller, S. A. and Davide, R. G. 2001. Root-knot disease of onion caused by the rice root-knot nematode *Meloidogyne graminicola*: Occurrence, pathogenicity, and varietal resistance. *Philipp. Agric. Scient.* (in press).

Gergon, E. B., Miller, S. A., Davide, R. G., Opina, O. S. and Obien, S. R. 2001. Evaluation of cultural practices (surface burning, deep ploughing, oranic amendments) for management of rice root-knot nematode in rice-onion cropping system and their effect on onion. *J. Pest Mgt.* (in press).

Hoy, C. W., Zhou, X. L., Nault, L. R., Miller, S. A. and Styer, J. 2000. Host plant, phytoplasma, and reproductive status effects on flight behavior of aster leafhopper (Homoptera: *Cicadellidae*) flight behavior. *Annals Entomol. Soc. Am.* 92:523-528.

Ivey, M. L. and Miller, S. A. 2000. First report of bacterial canker of pepper in Ohio. *Plant Disease* 84:810.

Louws, F. J., Wilson, M., Cuppels, D.A., Jones, J. B., Shoemaker, P. B., Sahin, F. and Miller, S.A. 2001. Field control of bacterial spot of tomato and pepper and bacterial speck of tomato using a plant activator. *Plant Disease* 85:481-488.

McDonald, M.B., A.F. Evans and M.A. Bennett. 2001. Using scanners to improve seed and seedling evaluations. *Seed Sci. and Technol.* 28:xx-xx (accepted).

Miller, S. A. 2001. Evaluation of fungicides for control of diseases of lettuce and parsley grown on muck soils. Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 53-55.

Miller, S. A. 2001. Evaluation of resistance, chemical fungicides and biological agents to control *Rhizoctonia* and clubroot of radishes. Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 56-57.

Miller, S. A. 2001. Pepper research update – *Phytophthora* blight control. Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 68-69.

Miller, S. A. 2001. Selecting peppers varieties for bacterial leaf spot resistance. Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 76-77.

Miller, S. A. 2001. Evaluation of host resistance and chemical and biological methods to control bacterial leaf spot and Phytophthora blight in peppers. Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 92-95.

Miller, S. A., Ivey, M. L. and Mera, J. 2001. Resistance of pepper varieties to bacterial spot, 2000. Biological and Cultural Tests 16: V98.

Pasian, C.C. and M.A. Bennett. 2001. Paclobutrazol soaked marigold, geranium and tomato seeds produce shorter seedlings. HortScience 36:xx-xx (accepted).

Precheur, R., R. Riedel, J. Jasinski, T. Harker, B. Bergefurd. and C. Welty. 2000. Evaluation of Pumpkin Cultivars for Resistance to Powdery Mildew. Biological and Cultural Tests 15: 185-186.

Precheur, R., R. Riedel, J. Jasinski, T. Harker, K. Magnuson, B. Lyon, G. Sutton, B. Bergefurd. and C. Welty. 2001. Pumpkins 2000. . Proceedings, Ohio Fruit and Vegetable Growers Congress, Toledo, OH, Feb. 7-9, 2001. Pp. 70-72.

Sako, Y., M.B. McDonald, K. Fujimura, A.F. Evans, and M.A. Bennett. 2001. A system for automatic seed vigor assessment. Seed Sci. and Technol. 29:625-636.

Wright, S. and Miller, S. A. 2001. Evaluation of *Bacillus*, *Brevibacillus*, and *Paenibacillus* spp. for management of tomato diseases, 2000. Biological and Cultural Tests 16: V99.

Wright, S. and Miller, S. A. 2001. Evaluation of *Bacillus*, *Brevibacillus*, and *Paenibacillus* spp. for management of bacterial spot of pepper, 2000. Biological and Cultural Tests 16: V100.

## **Research Reports**

**Cabbage Research Report- PDF file, Click here to download**

**Muck Crops Report- PDF file, Click here to download**

**The above reports require Adobe Acrobat Reader to view or print.**

**Ornamental Corn, Report + Pictures**

**2000 Fresh Market Green Pepper Cultivar Evaluation Tables + Pictures, Willard, OH,**

**Insecticide Trial on Red Bell Peppers in OH**



**Pumpkin 2000 Cultivar Evaluation and Powdery Mildew Tolerance, Columbus and Hillsboro**

**Some Group Pictures Are Here, More To Come. Click below to see the group pictures.**

- **All fruit**
- **Closer View of larger sizes.**
- **Medium size #1.**
- **Medium size #2.**
- **Small Fruit.**

**2000 Sweet Corn Cultivar Evaluation - PDF File - to download, click here!**

**2000 Update of Table: Susceptibility of sweet corn hybrids to Stewart's Bacterial Wilt**

**Stink Bug Control by Insecticides on Tomatoes**

**Organic vs Inorganic Mulches for Heirloom Tomatoes**

Vegetable Research Results 2000, Hort & Crop Science Series No. 709

Comparison of Organic and Inorganic Mulches for Heirloom Tomato Production

**Slidesets, Videotape**

“Vegetable Disease Update”, 2001 Pesticide Applicator Update Video, Tape #5, November 8, 2000.

“Vegetable Fungicide Update - 2001”, PowerPoint presentation. Available on VegNet.

**Paclobutrazol Seed Soak for Height Control in Vegetable Transplants - PPT file, Slide Set, Click here to download**

**WARNING!! The Above Slide set is 4 Megs and could take very long to download. For more information, email Mark Bennett**

**Web Pages**

1. Agricultural Business Enhancement (ABE) Center. Internet addresses for hydroponic resources and business planning can be found on the ABE Center website  
<http://www.ag.ohio-state.edu/~abe>.

2. Hydroponic Tomatoes by Dr. Ted Short and Mr. Jeff Ivey, Growers can enter their growing parameters into the website and get immediate feedback about their horticultural decisions.  
<http://www2.oardc.ohio-state.edu/hydroponics/tomatoes>

3. IPM Guidelines for vegetables, available on the web at:  
[www.ag.ohio-state.edu/~ipm](http://www.ag.ohio-state.edu/~ipm)

4. IPM. Weekly summary of pests caught in pheromone and blacklight traps at various Ohio locations was posted on the OSU IPM web page.  
<http://www.ag.ohio-state.edu/~vegnet/vegipm.htm>
5. Dr. Matt Kleinhenz. launched Feb. '00; 5000 hits as of July 31, 2000  
<http://www.oardc.ohio-state.edu/kleinhenz/>
6. The VegNet Website.  
<http://www.ag.ohio-state.edu/~vegnet>
7. The Weed Workshop at. (Doug Doohan)  
<http://www.oardc.ohio-state.edu/weedworkshop/>

## **Farm Labor Relations**

### **Educational Programs**

Educational programs concerning labor law compliance and labor productivity were presented to farm employers throughout the state. Presentations were made to fruit and vegetable growers at the Ohio Fruit & Vegetable Growers Congress/Ohio Roadside Marketing Conference in Toledo. Presentations were also made at the Ohio Christmas Tree Association's annual meeting in Akron, the Fruit Growers Marketing Association's annual meeting in Wooster, and the Fremont Company's cabbage growers meeting in Fremont. A labor education meeting was also presented in Ottawa to Putnam County farm labor employers.

### **Organizing MAAHS**

Farm labor employers are beginning to organize a regional labor association for employers in Ohio, Indiana, and Kentucky. This association desires to be proactive in labor recruiting, education, and compliance activities for farm and agribusiness employers. The FLR team is assisting in developing educational materials for this new venture and will be a resource for future educational initiatives. This new association will be the Mid American Ag and Hort Services Association

### **Grower Consultations**

Farm employers are seeking to expand and upgrade their housing services to migrant workers. The FLR team is assisting several growers by introducing them to the regulatory process. Assistance is provided for site selection, infrastructure layout, and proper interaction with licensing agencies. Follow up consultations on labor law compliance for new farm employers is also provided.

### **Public Policy/Agency Input**

There are many agencies that seek to assist seasonal migrant workers throughout the state. The FLR team is an active participant with agencies that currently are concerned with migrant outreach education, voluntary health and construction standards for migrant labor camps, and Community Health Services to provide adequate health care for migrant workers.

### **Grower Publications**

Several educational articles concerning recruitment, housing standards compliance, and health and safety training have been published in the Ohio Fruit and Vegetable Growers' publication "Today's Grower." The FLR team also publishes its own quarterly newsletter "The Communicator" for farm and agribusiness employers statewide.

## **Hydroponic Vegetables**

### **Educational Materials and Media Coverage**

- Hydroponic Internet Resource List
- The hydroponic web site <http://www/ag.ohio-state.edu/~abe/veg/veg.htm> was highlighted in the December 2000 issue of the Growing Edge magazine.
- Greenhouse, Vegetable, and Entrepreneurship Calendar
- Greenhouse Business Starter Packet

### **Meetings**

- Greenhouse Food Production 2000 was a three-day seminar combining business planning, marketing, horticulture, and greenhouse tours
- Greenhouse Food Production 2001, Ohio Fruit and Vegetable Growers' Congress, Toledo, Ohio. Two and one-half days of educational sessions on greenhouse
- design, energy conservation, marketing, crop selection, and horticulture

- Greenhouse Tour and Hydroponic Study Group Meeting, “What Flew and What Flopped?”

#### **Presentations:**

- The Ohio Hydroponic Vegetable Program: Marketing, Cooperation, and Education, Hydroponic Grower's Conference 2000, Orlando, Florida
- At least 550 people learned more about fresh vegetable production through presentations given to garden clubs, master gardener classes, school groups, growers' meetings, etc.
- Over 1,500 telephone, e-mail, and face-to-face conversations have been held with people interested in greenhouse vegetable production.
- Information packets have been compiled and distributed to over 30 individuals.
- Produce sales calls have been made to help local hydroponic vegetable producers sell their products more successfully.

#### **Service**

- Toledo Flower and Vegetable Growers' Association Board Member
- Ohio Fruit and Vegetable Growers' Congress Greenhouse Educational Advisor
- Chairperson of the OSU Extension Northwest District Entrepreneurship and Marketing Action Planning Committee
- Member of the OSU E-commerce, E-business Task Force
- Toledo Botanical Garden Education Committee Member
- Certified NxLevel Agricultural Entrepreneurship Teacher

### **Integrated Pest Management**

#### **IR-4**

IR-4 Food Use Workshop, Orlando, FL, September 11-12, 2000.  
 Attended by Veg Team representatives to provide input on needs of Ohio vegetable growers for crop protection materials.

IR-4 Food Use Projects: Cyfluthrin/Mustard Greens (efficacy only),  
Diflubenzuron/Mustard Greens.

*Investigators:* Casey Hoy and Mike Dunlap

*Funding:* IR-4 Project

### **Media: (TV, radio spots, newspaper articles, magazine articles)**

- Article in *The Vegetable Growers News* on heirloom and specialty tomatoes
- on NBC affiliate WSAZ, Huntington/Charleston gave seven minute program on current year's vegetable crop and planting activities

### **Meetings Organized by Vegetable Team Members**

December 13, 2000, The Meigs/Washington County Winter Vegetable School

January 16,23,30 and February 6 held a series on Integrated Crop Management for Greenhouse Producers, six growers who produce vegetable transplants attended.

February 22 Provided Vegetable and Core training for vegetable growers in Washington County, Ohio for Private Pesticide. Recertification.

February 13 Held Private Pesticide Recertification training for Meigs County Vegetable/Greenhouse Producers- three hour class

February 2001, Southwest OH Vegetable School, Valley Vineyards

The Breakfast Meetings with Growers and/or Allied Industry (April to Oct., 2000)

The Processing Vegetable Crops Breakfast involves 22 people sharing crop information and research activities. Participants were field personnel from cabbage and tomato processing companies, USDA vegetable inspection, OSU researchers and OSU Extension agents.

The Muck Crops breakfast involves growers from Celeryville and Hartsville areas, industry representatives, extension and university researchers. Discussion includes crop reports, pest updates, problem solving and research activities.



### **Meetings (Other schools and educational activities conducted by the Vegetable Team)**

- OSU Farm Science Review, London, Ohio. Vegetable Team booth. September, 2001.
- Muck Crops School, January, 2001.
- OH Vegetable and Potato Growers Annual Congress, Feb. 7-9, 2001
- SW Ohio Vegetable School 2/23
- Provided Master gardener training to 13 Athens/Meigs counties citizens in vegetable crops for one and one half hours, March 21.

### **OSU Classroom Instruction**

HCS 310 (Control of Crop Development) had enrollment of 30 students  
HCS 630 (Seed Production) had an enrollment of 11 students  
Veg Crops Journal Club

### **Presentations**

Doohan, D.J. 2001. Herbicide and Varietal Interactions to Avoid. Sweet Corn Session. The 2001 Mid-Atl. Fruit and Veg. Conf. 1:22.

Doohan, D.J. 2001. Herbicide Performance in the Field Matrix Field Study and Results. Tomato Session. The 2001 Mid-Atl. Fruit and Veg. Conf. II: 58-59.

Miller, S. "Management of pepper diseases". Meigs/Washington County Vegetable Growers Winter Meeting, December 13, 2000. 35 participants.

Miller, S. "Fungicide update for vegetables". Meigs/Washington County Vegetable Growers Winter Meeting, December 13, 2000. 35 participants.

Miller, S. "Disease Control in Radishes, Parsley and Lettuce – Results of 2000 Trials". Muck Crop Growers' Winter School. January 18, 2001. 70 participants.

Miller, S. "Selecting pepper varieties for bacterial leaf spot resistance". Ohio Fruit and Vegetable Growers' Congress. February 9, 2001. 60 participants.

Wright, S. and Miller, S. A. "Evaluation of *Bacillus* spp. for control of bacterial spot in tomatoes" presented at the 16th Annual Tomato Disease Workshop, Columbus, OH, Dec. 2000. 50 participants.

Miller, S. "Pepper research update – *Phytophthora* blight control". Ohio Fruit and Vegetable Growers' Congress. February 9, 2001. 60 participants.

Miller, S. "Update on fungicides for vegetable disease control". Ohio Fruit and Vegetable Growers' Congress. February 9, 2001. 90 participants.

### **Professional Meetings**

- January 18-19 Attended the North American Direct Marketing Conference in Mesa Arizona
- North Central Weed Science Society Annual Meeting, Kansas City, MO (12/00)

### **Research projects**

#### **2001 OSU Vegetable Crops Research Projects**

##### **Cabbage**

**Project Name:** Genotype, Planting and Harvest Date Effects on Fresh Market and Processing Cabbage Yield and Quality

**Investigator:** Dr. Matt Kleinhenz, Dept. of Horticulture and Crop Science

**Funding:** The OSU, OARDC, OSUE, Ohio Vegetable and Small Fruit Research and Development Program, vegetable seed industry, Cabbage, Inc., Fremont Company

**Grad. Student:** Ted Radovich (Ph.D.)

**Location:** Vegetable Crops Research Branch in Fremont and OARDC in Wooster

**Status:** Continuing

**Project Name:** Evaluation of Insecticides for Control of Lepidopteran Pests of Cabbage

**Investigator:** Casey Hoy and Mike Dunlap

**Funding:** OARDC, Various agchemical companies

**Status:** Continuing

**Project Name:** Developing an integrated program for management of black rot of cabbage

**Investigators:** Miller, S.

**Location:** Fremont

**Funding:** OVSFRD

**Status:** New

## **Greenhouse**

**Project Name:** Fall Hydroponic Greenhouse Tomato Evaluation 2000

**Investigators:** Brad Bergefurd, Christie Welch, and Lynn Miller

**Location:** OSU Centers at Piketon

## **Lettuce**

**Project Name:** Optimal Variety and Planting Date Combinations for Vegetables grown on Organic Soils – Romaine Lettuce, Mustard Greens, Spinach

**Investigator:** Dr. Matt Kleinhenz, Dept. of Horticulture and Crop Science

**Funding:** The OSU, OARDC, OSUE, Ohio Vegetable and Small Fruit Research and Development Program, vegetable seed industry

**Location:** Muck Crops Research Branch in Celeryville

**Status:** Continuing

**Project Name:** The characterization of candidate genes associated with host specificity and symptom development of aster yellows and maize bushy stunt phytoplasmas

**Investigators:** Hogenhout, S., Miller, S. and Meulia, T.

**Location:** Wooster

**Funding:** OARDC RECGP

**Status:** New

## **Melons**

**Project Name:** Eastern Muskmelon Cultivar Evaluation 2001

**Investigators:** Brad Bergefurd, Christie Welch, Thom Harker and Lynn Miller

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program,

**Location:** OSU Centers at Piketon

**Project Name:** Evaluation of Watermelon Cultivars 2001

**Investigators:** Brad R. Bergefurd and Thomas C. Harker

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program,

**Location:** OSU Enterprise Center Research and Demonstration Field Trials

## **Mixed Vegetables**

**Project Name:** Controlling Early Growth of Plugs with Seed-Applied PGR's (tomato, cabbage, pepper)

**Investigators:** Bennett, Pasian, Grassbaugh, Evans

**Funding:** Mid-America Food Processors Assoc.; OVSFRDP; Pickle Packers Int'l  
Field Research Committee

**Project Name: Ornamental Corn Evaluation 2001**

**Investigators:** Brad R. Bergfurd Bob Precheur and Thomas C. Harker

**Location:** OSU Enterprise Center Research and Demonstration Field Trials

**Project Name: Combining Bonzi and Biological Treatments in Vegetable Transplant Production, Growth and Yield**

**Investigators:** Surabhi Dikshit, Mark Bennett, Bob Precheur, Matt Kleinhenz, Mac Riedel

**Funding:** OARDC

**Project Name: Evaluation of Insecticides for Control of Thrips on Green Onions**

**Investigators:** Casey Hoy and Mike Dunlap

**Funding:** OARDC, Various agchemical companies

**Project Name: Evaluation of Insecticides for Control of Flea Beetles and Aphids on Collards**

**Investigators:** Casey Hoy and Mike Dunlap

**Funding:** OARDC, Various agchemical companies

**Project Name :IR-4 Food Use Projects: Cyfluthrin/Mustard Greens (efficacy only),  
Diflubenzuron/Mustard Greens.**

**Investigators:** Casey Hoy and Mike Dunlap

**Funding:** IR-4 Project

**Project Name: New commodity enterprises in Ohio – Evaluation and Education**

**Investigators:** Kleinhenz, M., Miller, S., Bergfurd, B. and Bierman, P.

**Location:** Wooster and Piketon

**Funding:** OARDC RECGP

**Status:** Continuing

**Project Name: Entomopathogenic Nematodes: Potential Biological Agents for Managing Soil Insect Pests in Diversified Vegetable Production.**

**Investigators:** Janet Lawrence and Casey Hoy

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program

**Project Name: Seed Quality Assessment Using Computer Imaging**

**Investigators:** McDonald, Evans, Bennett, Ling, Fujimura

**Funding:** Seed companies, OARDC Team Research Competition

**Status:** continued

**Project Name: IPM for Vegetables after Rice – IPM CRSP**

**Investigator:** Miller, S. and others

**Funding:** USAID

**Location:** Wooster, Philippines, Bangla-desh

**Status:** Continuing

**Project Name:** Revitalizing small and mid-sized farms: organic research, education and extension

**Investigators:** Stinner, B., Miller, S., Stinner, D., Moore, R., Cardina, J., Hoy, C., Grewal, P., Kleinhenz, M., Doohan, D., Michel, F., Kovach, J. and Batte, M

**Location:** Wooster and Columbus

**Funding:** USDA IFAFS

**Status:** New

## Peppers

**Project Name:** Genotype and Climatic effects on quality, yield and marketability of hot pepper

**Investigators:** Thom Harker, Bob Precheur, Brad Bergefurd

**Location:** Hillsboro

**Status:** Continuing.

**Project Name:** Development of strategies to manage Phytophthora blight and anthracnose in peppers.

**Investigators:** Miller, S.

**Location:** Wooster

**Funding:** OVSFRD

**Status:** New

**Project Name:** Evaluation of Green Pepper Varieties for Fresh Market (Yield, Quality and Disease Resistance).

**Investigators:** Precheur, R., R. Callendar, T. Harker and B. Bergefurd.

**Location:** Celeryville

**Funding:** Industry

**Status:** Continuing

## Popcorn

**Project Name:** Electrostatic Powder Coating of Popcorn

**Investigators:** Sheryl Barringer, Neal Ricks, Shivakumar Elayedath

**Funding:** Spray Dynamics, CIFT, Kraft

**Status:** Continuing

## Potato

**Project Name:** Evaluation of Insecticides for Control of Colorado Potato Beetle, Potato Leafhopper, and Other Insect Pests (continued)

**Investigators:** Casey Hoy and Mike Dunlap

**Funding:** OARDC, Various agchemical companies

**Project Name:** Importance of Subspecific Groups of Verticillium Dahliae and geographic strains of root-lesion nematodes in Potato Early Dying Disease

**Investigators:** Rowe, Omer, MacGuidwin (Univ. of Wisconsin)

**Location:** Wooster

**Funding:** USDA, OARDC

**Status:** Continuing



**Project Name:** Evaluation of Fungicides on Potato for Control of Early Blight

**Investigators:** Rowe, Omer

**Location:** Wooster

**Funding:** Various chemical companies

**Status:** Continuing

**Project Name:** Comparison of seedborne and soilborne sources of Verticillium in relation to Potato Early Dying Disease

**Investigators:** Rowe, Omer, Johnson (Washington State Univ.)

**Location:** Wooster

**Funding:** USDA, OARDC

**Status:** Continuing

**Project Name:** Potato Variety Development for New and Existing Production Challenges (conducted at the OARDC in Wooster)

**Investigators:** Dr. Matt Kleinhenz, Dept. of Horticulture and Crop Science

Mr. Gene Wittmeyer, Dept. of Horticulture and Crop Science

Mr. David Kelly, Ohio Potato Growers Association

**Sponsors:** The OSU, OARDC, OSUE, Ohio Vegetable and Small Fruit Research and Development Program, USDA-CSREES Special Research Grants Program, Potato

**Status:** Continuing

## **Pumpkins & Squash**

**Project Name:** Pumpkin Cultivar Evaluation and Powdery Mildew Resistance Ratings

**Investigators:** Bob Precheur, Thom Harker, Mac Riedel, Celeste Welty, Brad Bergefurd

**Sponsors:** Ohio Vegetable and Small Fruit Research and Development Program,

**Status:** Continuing

**Project Name:** Control of Fungal Pumpkin Disease on Pumpkin

**Investigators:** Mac Riedel and Brad Bergefurd

**Sponsors:** Industry

**Status:** Continuing

**Project Name:** Systemic soil insecticide evaluations for cucumber beetle control in pumpkins. OARDC, Western Branch.

**Investigators:** Celeste Welty & Jim Jasinski

**Funding:** Industry

**Status:** new

**Project Name:** Use of perimeter trap crop for cucumber beetle and bacterial wilt control in pumpkins. OARDC, Western Branch & Waterman Research Farm.

**Investigators:** Celeste Welty & Jim Jasinski

**Funding:** OVSFRDP

**Status:** new

## Radishes

**Project Name:** Evaluation of resistance, chemical fungicides, biological control agents and cover crops to control Rhizoctonia in radishes

**Investigators:** Miller, S.

**Location:** Celeryville

**Funding:** OVSFRD and IR-4

**Status:** New

## Sweet Corn

**Project Name:** Saturated Salt Accelerated Aging (SSAA) Test for Sweet Corn

**Investigators:** Mark Bennett, Elaine Grassbaugh, Andy Evans, Matt Kleinhenz

**Funding:** OVSFRDP, AOSA

**Project Name:** Evaluation of Insecticides for Control of Lepidopteran Pests of Sweet Corn

**Investigators:** Casey Hoy and Mike Dunlap

**Funding:** OARDC, Various agrochemical companies

**Status:** continued

**Project Name:** Endosperm Type, Genotype, and Growing Location Effects on Sweet Corn Crop, Ear, and Kernel Traits

**Investigator:** Dr. Matt Kleinhenz, Dept. of Horticulture and Crop Science

**Sponsors:** The OSU, OARDC, OSUE, Ohio Vegetable and Small Fruit Research and Development Program, vegetable seed industry

**Location:** Research Branches in Celeryville, Fremont, and Wooster

**Status:** Continuing

## Tomatoes

**Project Name:** Consumer acceptance of the color and viscosity of tomato products

**Investigators:** Sheryl Barringer and Keneko Claybon

**Status:** Continuing

**Project Name:** Tomato Breeding and Genetics: Evaluation of new varieties for production and canning quality.

**Investigators:** David Francis and Winston Bash

**Funding:** Mid-America Food Processors Association

**Location:** Conducted at the OARDC in Wooster; Vegetable Crops Branch, Fremont; OSU, Columbus; Grower cooperators in IN, PA, MI, and OH.

**Status:** Continuing

The goals of this project are to develop processing tomato varieties adapted to humid growing conditions.

**Project Name:** Tomato Breeding and Genetics: Development of bacterial spot resistant varieties.

**Investigators:** David Francis and Sally Miller

**Funding:** Mid-America Food Processors Association

**Location:** Conducted at the OARDC in Wooster and Vegetable Crops Branch, Fremont).

**Status:** Continuing

Resistant plant varieties provide an environmentally safe and effective means of controlling plant disease. To effectively use resistant varieties we need to identify and characterize new disease resistance genes and we need to understand if the resistance genes work to control all strains or races found within a population of pathogens. Information obtained from this work is being used to help plant breeders develop resistant varieties and to assist growers in choosing resistant varieties.

**Project Name:** Improving the efficiency of processing tomato production: managing color disorders

**Investigators:** David M. Francis (OSU), Thomas Sporleder (OSU), Steve Garrison (Rutgers), Chris Gunter (Purdue), Avtar Handa (Purdue), Tim Hartz (U.C. Davis)

**Funding:** IFAFS

**Location:** Conducted at the OARDC in Wooster; Vegetable Crops Branch, Fremont; OSU, Columbus; Grower cooperators in IN, PENN, MI, NJ, CA, and OH.

**Status:** NEW.

The manufacturing of high value processed-tomato products is economically viable for small processors and growers and requires fewer acres relative to the production of tomato commodities such as paste. Economic simulations indicate that the return on investment (ROI) rarely exceeds 6% for tomato commodities. In contrast, these simulations indicate that value added whole-peel and diced products yield an average ROI of 22%. The most important limitation to cost efficiency in production and processing of tomatoes intended for whole-peel and diced products are physiological disorders that affect both the appearance and nutritional quality of fruit. There is a need to better define color disorders, to research and design cost-effective management strategies for soil types, to extend management to include variety choice and rotation crops, and to help growers and processors estimate the costs and returns of their management decisions. To accomplish our goals we will develop a management plan based on existing information, extend the management plan by researching predictive tools and alternative nutrient management strategies, and use gene expression profiling to determine whether the diverse symptoms associated with disorders represent distinct problems. We will extend our activities to growers and processors through educational sessions, world wide web-based decision-tools, and on farm research.

**Project Name:** Genotype and Climatic effects on quality, yield and marketability of Fresh Market Tomato

**Investigators:** Thom Harker, Brad Bergefurd

**Location:** Hillsboro

**Project Name:** Evaluation of various bactericides for bacterial spot management

**Investigator:** Miller, S.

**Location:** Fremont

**Funding:** Industry

**Status:** New

**Project Name:** Evaluation of fungicides for foliar disease management

**Investigators:** Miller, S.

**Location:** Fremont

**Funding:** Industry

**Status:** New

**Project Name:** Optimization of pest, nutrient and water management tools for fresh market tomatoes

**Investigators:** Miller, S., Kleinhenz, M. and Doohan, D.  
**Location:** Wooster and Fremont  
**Funding:** USDA NC IPM  
**Status:** New

**Project Name: Intestinal Absorption of Carotenoids from Tomato Varieties with Different Pigment Content, Structure and Distribution.**

**Investigators:** Steven J. Schwartz, David M. Francis, Steve Clinton  
**Funding:** OARDC Research Enhancement Grant  
**Location:** Conducted at the OARDC in Wooster; Vegetable Crops Branch, Fremont; and OSU, Columbus. (  
**Status:** New project

The project aims to test diverse tomato products for nutritional characteristics. Tomato products from varieties that contain high concentrations of the red pigment, trans-lycopene, the orange pigment beta-carotene, or the orange pigment poly-cis-lycopene will be used.

## Vegetables

**Project Name: Evaluation of fungicides and application timing for Septoria management**

**Investigators:** Miller, S.  
**Location:** Celeryville  
**Funding:** IR-4  
**Status:** Continuing

**Project Name: Increasing the Health and potential Market Value of Ohio Vegetables**

**Investigator:** Dr. Matt Kleinhenz, Dept. of Horticulture and Crop Science  
**Sponsors:** The OSU, OARDC, OSUE  
**Grad. Student:** Ted Radovich (Ph.D.)  
**Status:** Continuing

**Project Name: Edamame soybeans: Variety evaluation**

**Investigators:** Miller, S., Kleinhenz, M. and Fioritto, R.  
**Location:** Celeryville and Piketon  
**Funding:** Various  
**Status:** New

## Weeds

**Project Name<sup>1)</sup> Fine Tuning Weed Management Systems for Strawberry Plantings.**

**Investigators:** Doohan, D.J.  
**Location:**  
**Funding:** Ohio Vegetable and Small Fruit Research and Development Program. \$3000,  
**Status:** 3/01 2/02

**Project Name: Maximizing KERB Activity in Lettuce by Optimal Timing of Post Application Irrigation**

**Investigators:** Doohan, D.J

**Location:**

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program. \$2000,

**Status:** 3/01 2/02

**Project Name:** Supporting Minor-Use Herbicide Registration and Weed Management Research for Muck Crops in Ohio.

**Investigators:** Doohan, D.J

**Location:**

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program. \$3000,

**Status:** 3/01 2/02.

**Project Name:** Weed Control Systems for Cucumbers and Pumpkins.

**Investigators:** Doohan, D. J

**Location:**

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program. \$2000.

**Status:** 3/01 2/02.

**Project Name:** Exciting New Weed Control Programs for Sweet Corn.

**Investigators:** Doohan, D.J.

**Funding:** Ohio Vegetable and Small Fruit Research and Development Program. \$3500,

**Status:** 3/01 2/02.

**Service:**

Members of the vegetable team serve on various planning or advisory committees with state, local growers, regional or national organizations groups

- Educational Advisors to OFVGA.
- Associate editor, vegetable crop production and reviewer in referred Journal of American Society for Horticultural Science, other professional societies.
- Collaboration with Southern Ohio Economic Development Corporation to establish a Order Buying System for the Wholesale Produce Auction.
- Direct Client Assistance
- Committee Membership. Chaired a national sub-committee of the ASHS Vegetable Crop Management Working Group. The sub-committee developed and delivered a workshop entitled "Vegetable Cropping Systems Research: Techniques, Evaluation, and Application" held at the 2000 Meetings of the American Society for Horticultural Science

**Planning or Advisory Committee Activities:**

- Educational Advisors to OVPGA
- Key Resource person to the OFBF during the annual OFBF Commodity Conference. Discussed emerging issues in agriculture (vegetable production), including enforcement of the Federal Clean Water Act, HACCP, farm labor, food safety, land use, mergers in the seed trade, and profitability.



- -assisted with development of Ohio crop profiles
- -assisted with diagnostics at the Plant & Disease Clinic
- -entomology rep to the Columbus Operations Advisory Committee (Waterman Farm)
- chairperson of the Food Safety Committee of the OSU Vegetable Team
- leading the OSU Extension northwest district Entrepreneurship and Marketing Action Planning Committee.
- member of the Toledo Botanical Garden Education Committee.
- Attended OVPGA Processing Crops Committee Meeting to review program and suggest topics for processing vegetable crops sessions at 2001 Fruit & Vegetable Growers Congress
- Truck Crops Committee

#### **Pesticide Labels**

- assisted in securing a Section 18 label for Gaucho on sweet corn seed
- assisted in securing a special local needs (24C) label for Orthene on peppers
- Third party (24C) labels for Dual Magnum on bell peppers, cabbage and dry bulb onions.

#### **Workshops organized by Vegetable Team Members**

- 16<sup>th</sup> Annual Tomato Disease Workshop, Columbus, December 2000. This is a national meeting for vegetable pathologists focusing on tomato disease management. Hosted by OSU. 60 participants.

## The OSU Vegetable Team

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